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ABSTRACT

This paper reports the results of a study that examined the issues created by implementation of campuswide microcomputer networks in a four-year public institution of higher education, and the perspectives and attitudes from which faculty users and computer center personnel view those issues. Six questions served as the focus of the study: (1) the uses that academic users have for a campuswide microcomputer network; (2) the advantages to academic users of such a network over other means of delivering computing services; (3) the disadvantages to academic users of such a network over other means of delivering computing services; (4) the issues that the campuswide microcomputer network has caused to surface or has caused to become more significant; (5) which of those issues are the most critical; and (6) how the faculty and the computer center are addressing the issues. A qualitative case study design was utilized, using personal interviews as the primary form of data collection. Data were then organized into matrices and analytic files constructed to organize the responses into categories that conceptualized the perceptions of the interviewees. Results indicated that a fundamental dichotomy exists between the two groups. Faculty users of the network were interested in computing only if it had immediate and important uses in their teaching, an emphasis espoused by the university in which they worked, whereas computer center personnel saw the network as a powerful tool with unlimited applications. Such different attitudes have implications for faculty training efforts: faculty prefer specific and individualized training, whereas the computer center provides training opportunities of a general nature. These differing perspectives, and the issues that arise because of them, must be addressed if campuswide networks are to be successful. (11 references) (DB)

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A Study of Faculty and Computer Center Personnel Perspectives on the Issues Surrounding Campus-wide Microcomputer Networks

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Introduction

The proliferation of the microcomputer in higher education has dramatically and rapidly changed the means by which computing services are delivered to academic users. Current efforts to connect microcomputers into campuswide networks have the potential to further the revolution in academic computing initiated by the microcomputer. In addition to altering academic computing, campuswide microcomputer networks will likely impact on how faculty teach and students learn, how research is conducted, and how those in higher education communicate with each other.

In the non-networked environment, academic users have utilized stand-alone microcomputers and thereby enjoyed both the autonomy of the microcomputer and the indifference of the computer center. As academic users become end users of computing services delivered through networks, they inevitably will become increasingly reliant upon the computer center. Thus, academic users and the providers of academic computing services will be called upon to work together more and more closely.

In the past, computing issues in higher education have created controversy, confusion, and conflict. The issues created or made more critical by the emergence of campuswide microcomputer networks will likely result in similar outcomes. From the literature regarding issues encountered in earlier computing environments, it appears that academic users of computing services and the computer center personnel view the issues from different perspectives. The problem facing higher education is that it is unclear how divergent the perspectives are and to what extent the divergence will serve as a barrier to the resolution of the issues.

This paper reveals the results of a study that examined the issues created by the implementation of campuswide microcomputer networks in institutions of higher education and the perspectives from which faculty users and the computer center personnel view those issues. Six questions served as the focus of the study. Those questions were: a) What uses do academic users have for a campuswide microcomputer network?; b) What are the advantages to academic users of a campuswide microcomputer network over other means of delivering computing services?; c) What are the disadvantages to academic users of a campuswide microcomputer network over other means of delivering computing services?; d) What are the issues that the campuswide microcomputer network has caused to surface or has caused to become more significant?; e) Of those issues, which are most critical?; and f) How are the faculty and the computer center addressing the issues?

Because the implementation of campuswide microcomputer networks is a recent phenomenon, and because no empirical studies have been conducted on this phenomenon, a qualitative case study design was utilized. A four-year public institution of higher education which had recently installed a campuswide microcomputer network served as the single case for the study. Due to the immaturity of the network, its services, and the applications of its users, the institution offered a dynamic and rich environment for study. Interviews of twenty-five individuals--15 academic users of the network, 5 non-computer-using faculty, and 5 computer center personnel--were conducted.

The primary form of data collection for this study was personal interviews. A protocol and interview guide were developed so that each interviewee responded to the same set of questions under similar circumstances. The interview guide consisted of open-ended questions designed to reveal the interviewee's perceptions of academic computing when delivered through a campuswide microcomputer network.

The qualitative data collected in the interviews were summarized then organized into matrices. The matrices allowed for some ordering of the data prior to actual analysis. Finally, analytic files

were constructed--and reconstructed--to organize the responses into categories that conceptualized the perceptions of the interviewees.

The implementation of a campuswide microcomputer network at Beta University--a fictitious name--had both created new academic computing issues and intensified others and verified that the assumption academic users and the computer center personnel possessed different perspectives was well founded. The study provided a glimpse of the issues that existed, it produced insight into the perspectives from which those issues were viewed and--not surprisingly--revealed that a communications problem existed between the two groups.

This paper offers an examination of the underlying factors that appeared to define the perspectives which academic users and the computer center personnel possessed as they viewed academic computing activities at Beta University. The purpose of this discussion is to provide an over-arching explanation for the different attitudes manifested by the two groups studied.

Discussion

In order to understand more fully the perspectives from which academic users of computing and the computer center personnel approached computing issues, it is useful to examine the factors that shape those perspectives. At Beta University, it appeared that the cultural dimensions of the organization were influencing the attitudes of users and providers of academic computing services. While both groups shared the culture of the institution, they appeared to be influenced by important subcultures that they did not share.

It has been observed that organizational culture influences academic computing (Masland, 1983, April). The culture of an institution of higher education includes its values, beliefs, attitudes, rituals, symbols, and saga (Masland, 1988). Others have suggested that within organizations, subcultures also exist which influence behaviors--e.g. subcultures of the academic profession and subcultures of specific academic disciplines (Kuh and Whitt, 1988, Masland, 1988). An examination of perspectives would not be complete without examining the underlying cultural influences which served to shape those perspectives.

As the interviewees discussed the advantages and disadvantages of the network, their experiences with the network, and the issues which they perceived to exist, they revealed much about themselves and the group to which they belonged. What became clear were the beliefs, attitudes, and values that the interviewees possessed regarding academic computing at Beta University. Their responses defined their perspectives and hence provided insight into the cultural spheres which were influencing their thinking.

In some ways the cultures of the two groups appeared to be congruent. After all, both the academic users and the computer center personnel were professional groups within the same organization, and they both served a well-defined clientele. Academic users served the student, whereas the computer center personnel served all campus computer users--administrators, faculty, and students. Thus, both groups shared client service as a primary role. As components of Beta University, academic users and computer center personnel were influenced by the organizational culture of the institution. Masland wrote that organizational "cultures guide behavior of those within the organization" (1983, April, p. 10). At Beta University, the academic users and the computer center personnel shared the institution's values, ideologies, and beliefs. In part because of these common cultural aspects, several of the issues were viewed similarly by the two groups. A shared concern about lack of funding and access to computing seemed to transcend subcultures and to be the product of a sincere concern for students, faculty, and the institution--an attitude seemingly derived from the institutional culture.

Even though a consensus emerged concerning the need for faculty training, the fact that faculty training remained an issue is important. That may have been due to the divergent manner in which the two groups viewed academic computing. That divergent view, which appeared to be related to cultural factors, had likely contributed to the perceived ineffectiveness of faculty training efforts attempted thus far. The faculty, influenced by the institution's focus on teaching, seemed interested in computing only if it had immediate and important uses in their teaching. Evidence of the institution's emphasis on teaching was found in the evaluation system used by tenure-earning professors at Beta University. That system required that no less than 50% of the evaluation be

based on teaching proficiency with service and scholarship comprising the remaining 50%. Access to student advisement information was the one application not directly related to instruction that almost all academic users were interested in using. Services such as communications capabilities, personal calendars, and bulletin board access generated little interest on the part of academic users.

The perspective of the computer center personnel was that the campuswide microcomputer network was a powerful tool with almost unlimited applications. To some in this group, it seemed incredulous that faculty had not used their own funds to purchase microcomputers. One staff member suggested that word processing alone could justify such action on the part of faculty. None of the computer center personnel interviewed could be justly accused of underestimating the importance of the network in enhancing academic computing at Beta University. All of those individuals were highly experienced and competent computer users in many aspects of their own jobs. To them there was no doubt that increased use of computing would translate into better instruction, more efficient and productive faculty, and of course increased utilization of computer center services.

These observations have serious implications for faculty training efforts at Beta University. The differing cultures--or perspectives--have the potential to cause training to remain an issue. As Masland (1983, April) suggested, academic computing decisions should be congruent with the culture of the organization. It would follow that congruence at the subculture level would also be desirable. At Beta University, some significant incongruences existed. Faculty viewed the network services as having very specific and narrow applications to their teaching, and in many cases, they viewed these applications as unique. The computer center personnel viewed the network as offering a variety of services, some of which had teaching applications while others did not. Hence, it appeared that the faculty needed specific and individualized training, whereas the computer center was prepared to provide training opportunities of a very general nature.

The most important incongruence was revealed in a question raised by a computer center staff member, who asked, "How do you get novice computerists to where the university wants them to

be?" The assumption made here was that the university had established some desired level of computing proficiency for the faculty. The university, however, had not incorporated such a goal into its incentive and reward structures, nor had it articulated this goal to its faculty. In other words, this goal appeared to have its origins in the computer center and was a manifestation of its culture. These incongruences may explain the lack of success training efforts have enjoyed thus far at Beta University.

Academic users perceived planning needs and processes to be critical issues, while the computer center personnel did not. The users had concerns about the planning that was being done concerning the growth and expansion of the network, and they were concerned about their lack of participation in that process. Furthermore, academic users were concerned that the joint institutional council on computing--the organizational structure most likely to facilitate academic involvement in planning--had come to be regarded as a "joke."

The cultural influences underlying the perspectives of those interviewed are worth considering when examining the planning and organizational issues. Concepts such as academic freedom, autonomy, and collegiality have long been a part of the academic profession as a subculture of the university (Kuh and Whitt, 1988). Faculty governance is a key part of the concept of collegiality. In higher education, faculty expect to participate in the governance of their department, school or college, and institution. To several of those interviewed, this participation should be extended to campus computing activities. However one academic user viewed computing as a utility, much like the electric company. He suggested that he was not involved in running the electric company and was not interested in running the campuswide microcomputer network. But of those who discussed planning structures and processes his was the lone voice suggesting that faculty need not be involved in planning. The others expressed concern about a lack of meaningful opportunities to participate in the planning for academic computing.

The computer center personnel did not share the academic user's concern about planning opportunities and organizational issues. The computer center personnel operated within a culture that embraced hierarchy and the chain of command--characteristics of a bureaucratic organization.

In fact, when discussing the communications difficulty between users and the computer center, one staff member was very concerned that users were not familiar with the chain of command in the computer center. He seemed overly concerned that in the past users had contacted the wrong person in the computer center bureaucracy. Another staff member confided that he had little insight to offer the study because he was not involved in planning, just implementation. The organization of the computer center exhibited several of the classic characteristics of a bureaucracy--hierarchy, formal channels of communication, formal policies and rules, specialization of task, and impersonality (Silver, 1983). Collectively, the members of the computer center staff appeared comfortable with that organizational structure--an attitude that was a part of their culture.

The divergence of attitudes toward planning and organizational issues is without doubt the most important finding of the study. Clearly, when one group controlled virtually all of the computing resources on campus and planned for the utilization of those resources without opportunities for meaningful input from the academic component of the university, conflict was certain to result--and it did. At Beta University a clear need had surfaced for planning structures that brought more, not fewer, voices into the discussion about academic computing issues. The existing planning structures were not perceived as offering meaningful opportunities for input by academic computing users. Quite disturbingly, the computer center personnel did not appear to understand this criticism. That was probably due to the fact that, in this aspect of academic computing at Beta University, the culture of the computer center appeared to dominate.

The creation of planning structures and processes for academic computing that meet the needs of users and providers of computing services will most likely present continuing challenges to administrators in higher education. This will be a difficult task when the primary providers of computing services flourish within a hierarchical culture while the users of their services thrive within what some have described as an "organized anarchy" (Cohen and March, 1988).

C. P. Snow (1982) observed two cultures and articulated his concerns about their existence in the Rede Lecture of 1959. In that famous lecture, Snow observed that the gulf between scientists and non-scientists had its core in the existence of two cultures. Snow's observations of three

decades ago seem remarkably applicable to the findings of this study. That is particularly true when the communications difficulties reported by those interviewed are considered. About the difficulty scientists and non-scientists had communicating, Snow wrote: "Persons educated with the greatest intensity we know can no longer communicate with each other on the plane of their major intellectual concern" (p. 60). From Snow's observation, it is not surprising that a communications problem was encountered in this study.

Even if the academic users and the computer center staff were willing to bridge the gap between the two cultures, obstacles existed which hindered those efforts. At Beta University, inadequate planning structures and processes appeared to contribute to the inability of the two groups to communicate with each other. Forums which could have been used for the free exchange of ideas about computing were not available. Evidence of poor communication was provided by the staff member who observed that a crisis level had to be reached before a situation could be resolved. More open and accessible planning structures would have allowed issues and problems to be resolved prior to issues reaching a crisis level.

Snow captured the seriousness of communications difficulties between scientists and non-scientists when he wrote, "It is dangerous to have two cultures who can't or don't communicate" (p. 98). While the consequences of poor communications at Beta University are obviously not as perilous as Snow foresaw for society, the inability of academic users and the computer center personnel to communicate effectively will likely result in serious consequences for Beta University. The consequences will likely include, at a general level, wasted resources and continued conflict. More specifically, the consequences may include: the computer center delivering services that are unwanted and unneeded by academic users; the computer center delivering services that faculty are unable to utilize due to a lack of knowledge; and faculty needing computing services that are never clearly articulated and consequently never satisfied.

Final Comments

The irony encountered in this study was that a technology that offered enhanced communications and better information for its users was itself the centerpiece of poor communication and a lack of information. As long as this irony persists, it is unlikely that the potential of campuswide microcomputer networks will be realized. To remove the irony will require further study and considerable effort on the part of faculty, computer center personnel, and administrators, all of whom must remain cognizant of the cultural influences that shape the perspectives of users and providers of academic computing services.

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